

High Resolution Graphics Plotting

The following two programs demonstrate the high resolution graphics capabilities of the VZ-200. Both programs will run on the unexpanded (8k) computer.

Circle Plotting

Here is a quick but fairly accurate program to get your VZ-200 to draw circles. The following notes explain the program and will help in conversion to other machines.

- Line 10 Sets high resolution graphics mode.
- Line 20 These variables set the circles' centre to a position in the centre of the screen. By altering these variables it is possible to place the circles anywhere on the screen.
- Line 30 These variables determine the shape of the circles. Eclipses can be formed by altering the values of these variables.
- Line 40 R is the radius of the circle, N is the number of points to be plotted in the circle.
- Line 2000 A is set at $2 \times \pi$ which is a circle in radians.
- Line 2030/2040 Contain the formulae which determine the value of the X and Y co-ordinate.
- Line 2050 SET(X,Y) is the equivalent to HPLOT and PLOT X,Y in other versions of Basic.



Three Dimensional Plotting

This is a simple program for evolving three dimensional representations of trigonometrical functions on the VZ-200.

The following notes explain the main points in the program.

- Line 100 Sets the high resolution graphics mode.
- Line 110/V and H set the vertical and horizontal 115 screen dimensions of the plot.
- Line 170 Assumes that the point with co-ordinates 0,0 is at the top left hand corner of the screen.
- Line 175 Sets the points on the screen, SET is equivalent to PLOT and HPLOT on other systems.
- Line 155 Is the nucleus of the plot; this trigonometrical formula is the function to be plotted.

Variations are found in lines 255, 355, 455, etc., the program plotting a series of seven designs, pausing between plots. Pressing any key at the end of each plot clears the screen and then commences drawing the next design.

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1 CLS: '*****
2 '** VZ-200 CIRCLE PLOTTER **
3 '* IAN A. THOMPSON *
4 '*****
6 PRINT@71," CIRCLE PLOTTER "
7 PRINT@257,"IAN THOMPSON,
  COLLORoy PLATEAU"
8 IF INKEY$="" THENB
9 IF INKEY$="" THENB
10 MODE(1):COLOR,0:COLOR 3
15 REM****R=30
20 CX=60:CY=30
30 OX=1.5:OY=1
40 R=30:N=150
50 GOSUB 2000
100 REM****R=25
110 COLOR 2
120 CX=60:CY=30
130 OX=1.5:OY=1
140 R=25:N=130
150 GOSUB 2000
200 REM****R=20
210 COLOR 4
220 CX=60:CY=30
230 OX=1.5:OY=1
240 R=20:N=110
250 GOSUB 2000
300 REM****R=15
310 COLOR,1:COLOR 7

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320 CX=60:CY=30
330 OX=1.5:OY=1
340 R=15:N=90
350 GOSUB 2000
400 REM****R=10
410 COLOR,1:COLOR 6
420 CX=60:CY=30
430 OX=1.5:OY=1
440 R=10:N=70
450 GOSUB 2000
500 REM****R=5
510 COLOR,1:COLOR 8
520 CX=60:CY=30
530 OX=1.5:OY=1
540 R=5:N=50
550 GOSUB 2000
1000 FOR A=1 TO 800:NEXT A
1010 COLOR,0
1020 FOR A=1 TO 800:NEXT A
1030 COLOR,1
1040 GOTO 1000
2000 A=2*(22/7)
2010 C=A/N
2020 FOR I=0 TO A STEP C
2030 X=R*SIN(I):X=INT(X*OX+CX+0.499)
2040 Y=R*COS(I):Y=INT(Y*OY+CY+0.499)
2050 SET(X,Y)
2060 NEXT I
2070 RETURN

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5 CLS:SOUND25,6
10 PRINT@41," 3-DIMENSIONAL "
   : 'FOR THE UNEXPANDED VZ-200
20 PRINT@102,"[BY IAN THOMPSON]"
30 PRINT:PRINT@162,"THIS IS
   A SIMPLE PROGRAM FOR"
40 PRINT@194,"EVOLVING
   THREE-DIMENSIONAL"
50 PRINT@226,"REPRESENTATIONS
   OF TRIG-"
60 PRINT@258,"ONOMETRICAL
   FUNCTIONS."
70 PRINT@448,"PRESS ANY KEY TO
   START PLOTTING"
90 IF INKEY$="" THEN 90
91 IF INKEY$="" THEN 90
100 MODE(1)
105 COLOR,0
107 COLOR 2
110 H=117
115 V=63
125 X1=H/2:X2=X1*X1:Y1=V/2:Y2=V/4
130 FOR X=0 TO X1
135 X4=X*X:M=-Y1
140 A=SQR(X2-X4)
145 FOR I=-A TO A STEP V/10
150 R=SQR(X4+I*I)/X1
155 F=(R-1)*SIN(R*12)
160 Y=I/5+F*Y2
165 IF Y<=M THEN 180
170 M=Y:Y=Y1-Y
175 SET (X1-X,Y):SET (X1+X,Y)
180 NEXT I:NEXT X
190 IF INKEY$="" THEN 190
195 IF INKEY$="" THEN 190
200 MODE(1)
205 COLOR,0
207 COLOR 3
210 H=117
215 V=63
225 X1=H/2:X2=X1*X1:Y1=V/2:Y2=V/4
230 FOR X=0 TO X1
235 X4=X*X:M=-Y1
240 A=SQR(X2-X4)
245 FOR I=-A TO A STEP V/10
250 R=SQR(X4+I*I)/X1
255 F=COS(9*R)*(1-R)*2
260 Y=I/5+F*Y2
265 IF Y<=M THEN 280
270 M=Y:Y=Y1-Y
275 SET (X1-X,Y):SET (X1+X,Y)
280 NEXT I:NEXT X
290 IF INKEY$="" THEN 290
295 IF INKEY$="" THEN 290

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300 MODE(1)
305 COLOR,1
307 COLOR 7
310 H=127
315 V=63
325 X1=H/2:X2=X1*X1:Y1=V/2:Y2=V/4
330 FOR X=0 TO X1
335 X4=X*X:M=-Y1
340 A=SQR(X2-X4)
345 FOR I=-A TO A STEP V/20
350 R=SQR(X4+I*I)/X1
355 F=COS(20*R)*(1-R)
360 Y=I/5+F*Y2
365 IF Y<=M THEN 380
370 M=Y:Y=Y1-Y
375 SET (X1-X,Y):SET (X1+X,Y)
380 NEXT I:NEXT X
390 IF INKEY$="" THEN 390
395 IF INKEY$="" THEN 390
400 MODE(1)
405 COLOR,0
407 COLOR 4
410 H=127
415 V=63
425 X1=H/2:X2=X1*X1:Y1=V/2:Y2=V/4
430 FOR X=0 TO X1
435 X4=X*X:M=-Y1
440 A=SQR(X2-X4)
445 FOR I=-A TO A STEP V/20
450 R=SQR(X4+I*I)/X1
455 F=ATN(20*R)*(1-R)
460 Y=I/5+F*Y2
465 IF Y<=M THEN 480
470 M=Y:Y=Y1-Y
475 SET (X1-X,Y):SET (X1+X,Y)
480 NEXT I:NEXT X
490 IF INKEY$="" THEN 490
495 IF INKEY$="" THEN 490
500 MODE(1)
505 COLOR,1
507 COLOR 8
510 H=127
515 V=63
525 X1=H/2:X2=X1*X1:Y1=V/2:Y2=V/4
530 FOR X=0 TO X1
535 X4=X*X:M=-Y1
540 A=SQR(X2-X4)
545 FOR I=-A TO A STEP V/20
550 R=SQR(X4+I*I)/X1
555 F=LOG(25*R)*(1-R)
560 Y=I/5+F*Y2
565 IF Y<=M THEN 580
570 M=Y:Y=Y1-Y
575 SET (X1-X,Y):SET (X1+X,Y)

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580 NEXT I:NEXT X	695 IF INKEY\$="" THEN 690
590 IF INKEY\$="" THEN 590	700 MODE(1)
595 IF INKEY\$="" THEN 590	705 COLOR,1
600 MODE(1)	707 COLOR 7
605 COLOR,0	710 H=127
607 COLOR 3	715 V=63
610 H=127	725 X1=H/2:X2=X1*X1:Y1=V/2:Y2=V/4
615 V=63	730 FOR X=0 TO X1
625 X1=H/2:X2=X1*X1:Y1=V/2:Y2=V/4	735 X4=X*X:M=-Y1
630 FOR X=0 TO X1	740 A=SQR(X2-X4)
635 X4=X*X:M=-Y1	745 FOR I=-A TO A STEP V/15
640 A=SQR(X2-X4)	750 R=SQR(X4+I*I)/X1
645 FOR I=-A TO A STEP V/15	755 F=(1-R)
650 R=SQR(X4+I*I)/X1	760 Y=I/5+F*Y2
655 F=SGN(15*R)*(1-R)	765 IF Y<=M THEN 780
660 Y=I/5+F*Y2	770 M=Y:Y=Y1-Y
665 IF Y<=M THEN 680	775 SET (X1-X,Y):SET (X1+X,Y)
670 M=Y:Y=Y1-Y	780 NEXT I:NEXT X
675 SET (X1-X,Y):SET (X1+X,Y)	790 IF INKEY\$="" THEN 790
680 NEXT I:NEXT X	795 IF INKEY\$="" THEN 790
690 IF INKEY\$="" THEN 690	800 GOTO 100

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